

## **Draft Compatibility Determination**

**Use:** Provide the State of Delaware's Department of Natural Resources and Environmental Control (DNREC) personnel and equipment access to private land through U.S. Fish and Wildlife Service (Service) lands, and use of sand located on Service lands to conduct dune-line reconstruction.

**Refuge Name:** Prime Hook National Wildlife Refuge (NWR)

### **Establishing and Acquisition Authority (ies):**

Prime Hook NWR was approved by the Migratory Bird Conservation Commission on August 21, 1962, to protect and preserve coastal wetlands that are historically of high value as waterfowl habitat. Approval was given for acquisition of 11,576 acres. The refuge currently consists of 10,132 acres acquired in fee simple and eight flowage easements totaling 884 acres.

### **Refuge Purpose(s):**

For lands acquired under the Migratory Bird Conservation Act, 26 USC 715-715r, as amended, the purpose of the acquisition is "for use as an inviolate sanctuary, or for any other management purpose, for migratory birds." 16 USC 715d (Migratory Bird Conservation Act)

For lands acquired under the Refuge Recreation Act, 16 USC 460k, as amended, the purpose of the acquisition is "...suitable for (1) incidental fish and wildlife-oriented development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species..." 16 USC 460k-1 (Refuge Recreation Act).

### **National Wildlife Refuge System Mission:**

The mission of the National Wildlife Refuge System (NWRS) is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

### **Description of Use:**

*a) What is the use? Is the use a priority public use?*

This compatibility determination (CD) is to allow DNREC to cross Service lands and utilize sand on Service lands to conduct dune work on private lands. Area is located along the Delaware Bay in Unit II, south of Fowler Beach Road. An environmental assessment (EA) was completed and finalized on November 1, 2010. The EA describes the project in much greater detail.

The use involves access for the reconstruction of approximately 950 feet of dune/berm on refuge

land using on-site sediments on an interim basis until the comprehensive conservation plan (CCP) is finalized (Figure 5 in the EA). Those sediments would be used to repair dunes both on and off the refuge. Off-refuge lands involved in the project includes 2,000 feet of 3,200 feet of dune-line on private lands within the approved refuge boundary held by three individual landowners. In addition, newly created inlets south of Fowler Beach Road will also be filled. Due to the dynamics of the system, it is likely that a portion of the sediments used for this project originated on both refuge and private lands before being relocated by the overwash process.

The purpose is to reestablish dune-lines on refuge lands utilizing existing sand on the landward side, with the goal of joining this dune/berm to any remaining dunes on private lands. The alignment of this dune/berm will be as far landward as possible, given the constraints of the site and conditions required by the State of Delaware. The resulting dune/berm may be approximately 950 feet long, 100 feet wide at the base, and 5.2 feet high North American Vertical Datum (NAVD), with a 10:1 slope on east and 8:1 slope on the west side on refuge land. The entire project would be 2,950 feet long, 100 feet wide at the base and 5.2 feet high. The size of the dune will be limited by available sand (a base must remain in place to support the weight of the equipment). The estimated volume of sand needed for the project ranges between 364,000 and 494,000 cubic feet on refuge land to 1,040,000 cubic feet more or less on private land. Both prior to project initiation and after completion, the site will be surveyed by DNREC to show the dune/berm footprint and with elevations along the length of the work. More accurate estimates of the volumes of material moved will be able to be made on the basis of these engineering surveys. A layer of sand sufficient to support the weight of the equipment would be left in place. No sand will be removed below the 2.2-foot NAVD level. Mean high water is 1.9-foot NAVD. In addition, the use would close recently formed inlets south of Fowler Beach Road and allow sand that has likely washed onto the refuge to be moved back onto higher elevations of refuge land, and partially onto private land. The work will only be conducted if the entire dune along Unit II, including portions on private land, is slated for reconstruction.

This use is not a priority public use. Environmental stipulations are to be included in the Special Use Permit to help minimize environmental impacts and ensure compatibility with the purposes for which the refuge was established and the mission of the (NWRS).

*b) Where would this use be conducted?*

Refuge lands involved in this project are located along the Delaware Bay between the end of Fowler Beach Road and the Primehook Beach community to the south. Approximately 700 feet of the barrier island located immediately south of Fowler Beach Road is owned by the refuge and the remainder is on private lands. All marsh areas below mean low water behind (west of) the barrier island are part of the refuge. The project location involves a complex patchwork of refuge and private ownership (Figure 2 of the EA).

*c) When would this use be conducted?*

The initial work is expected to be conducted November/December 2010. Any work taking place in the future will take place between August 15 and March 1 to avoid conflicts with migratory birds. Depending on weather, the work would take two to three weeks to complete.

*d) How will this use be conducted?*

The work will be completed by two to three equipment operators operating tracked and wheeled equipment and vehicles. Delaware Department of Transportation has been notified that their support may be needed for road repairs hauling equipment and supplies to and from the site.

*e) Why is this use being proposed?*

The purpose of scraping overwash sediment to rebuild a dune/berm along Unit II and allowing the State to bring in additional sediment is to re-establish needed water management capability in Unit II, permitting time for rigorous monitoring of the system and development of a long-term restoration and management plan based upon the newly-collected scientific information. The Service has developed a marsh and water monitoring program, setting forth the scientific efforts it is initiating in order to develop the specific information needed to craft its long-term restoration and management plan. The primary purpose of this action is to maintain current habitats in as stable a condition as possible to prevent disintegration of the marsh substrate and peat while technical information is generated and long-term restoration actions are developed. The factors affecting the habitats within Unit II are complex and include the hydrological system resulting from fresh and salt-water inputs, dikes, culverts, and roads; geologic factors (erosion, barrier island rollover, subsidence, net sea level rise, and climate change); anthropogenic factors (ditching and canal dredging for agriculture and mosquito control, withdrawal of ground water for irrigation and domestic uses, roads, and nutrient run-off); and prior management decisions to manipulate conditions to support fresh water vegetation in a marsh system that was originally mixed salt marsh, brackish, and freshwater. However, too rapid a change to a saline system risks conversion of the unit to open water, thus foreclosing the potential for marsh restoration. Therefore, the Service has determined that it is appropriate to collaborate with the State in order to preserve its ecological management options to the extent feasible while longer-term management goals are being developed through the pending CCP process and a longer term habitat restoration/management plan is developed.

Also by re-establishing the dune/berm, the refuge is allowing for the continued management of the freshwater system for the benefit of migratory birds. In 1988, the Service entered into a Memorandum of Agreement with DNREC to enhance waterfowl habitat in Unit II. The purpose of the agreement was to maintain the facility (water control structure) for the estimated life of the structure, which was 20 years. It was amended to include an additional 10 years for a total of 30 years.

### **Availability of Resources:**

Adequate refuge personnel and base operational funds are available to manage this activity at current levels. Staff time primarily involves monitoring use to ensure compliance with permit stipulations. No Federal funds will be used to perform work on private lands. The estimated project cost for the initial work is \$13,000 to \$19,000. Construction costs are \$125 to \$150 per hour, depending on equipment involved. Mobilization and de-mobilization will cost approximately \$1,000. These amounts do not include the cost of hauling sand.

### **Anticipated Impacts of the Use:**

The following is a summary of the anticipated impacts. Please refer to EA for a more complete review of the anticipated impacts of the project.

Equipment and personnel may disturb loafing migratory birds while accessing private land. Access will be restricted from March through August 15 due to nesting migratory birds such as osprey and terns. The birds are expected to habituate or return to feeding/loafing once the vehicle has passed. (Klein 1993).

Levisen and Van Dolah (1996) studied infaunal recovery after bulldozing occurred on a beach in South Carolina. Within 60 days, species abundance and diversity of the overall faunal complex and abundance of dominant taxa recovered. This study supports earlier findings that documented quick recovery of invertebrate fauna and no long-term changes to species composition from beach scraping (Baca and Lankford 1988; CSA 1991; Lankford and Baca 1987; Lankford, et al. 1988). Peterson, et al. (2000) documented a 100 percent increase in abundance of coquina clams following bulldozing activities. Lindquist and Manning (2001) did not detect any negative impacts to the amphipod *Amphiporeia virginiana* or the polychatete *Scoelelepis squanata*. The Lindquist and Manning (2001) study documented negative impacts to some species, most notably mole crabs and ghost crabs. The cause for the decrease in mole crab and ghost crab abundance could not be determined. Negative environmental consequences could be mitigated if the heavy equipment movement occurs toward the end of the summer or later.

Disturbance factors resulting from uses are always considered for all listed species. The Delmarva fox squirrel (*Sciurus niger cinereus*) and piping plover (*Charadrius melodus*) are listed as endangered by the Service. Several other species listed as endangered by the Delaware Division of Fish and Wildlife include American oystercatcher (*Haematopus palliatus*), common tern (*Sterna hirundo*), Forster's tern (*Sterna forsteri*), least tern (*Sterna antillarum*), and bald eagle (*Haliaeetus leucocephalus*). Of these, impacts on the piping plover, American oystercatcher, common tern, Forster's tern, and least tern will be minimized through the seasonal closure of designated beach dunes and overwash areas from March 1 through August 15. A Section 7 Evaluation has been conducted as part of this review and it was determined that proposed use would not likely affect piping plover. The use will not impact Delmarva fox squirrels as the area is not considered Delmarva fox squirrel habitat.

Since the refuge consists of 80 percent wetlands, all uses have the potential of impacting

waterfowl, shorebirds, marsh birds, and other migratory bird populations feed and/or resting near this area. Conflicts arise when migratory birds and humans are present in the same areas (Boyle and Samson 1985). Response of wildlife to human activities includes departure from site (Owen 1973, Burger 1981, Korschen, et al 1985, Henson and Grant 1991, Kahl 1991, Klein 1993), use of suboptimal habitat (Erwin 1980, Williams and Forbes 1980), altered behavior (Burger 1981, Korschen, et al. 1985, Morton et al. 1989, Ward and Stehn 1989, Havera et al. 1992, Klein 1993), and increase in energy expenditure (Morton, et al. 1989, Belanger and Bedard 1990). McNeil et al. (1992) found that many waterfowl species avoid disturbance by feeding at night instead of during the day.

Laskowski, et al. (1993) studied behavior of snowy egrets, female mallards, and greater yellowlegs on Back Bay NWR in Virginia within 91.4 meters of impoundment dikes used by the general public for activities including walking, bicycling, and driving vehicles. The study found that all species increased alert behavior and in some cases decreased maintenance behavior (combined feeding, resting, and preening) in the presence of one or more of these human activities.

Pfister, et al (1992) investigated human disturbance as a factor that might limit the capacity of appropriate staging areas to support migrating shorebirds. Long-term census data were used to test the hypothesis that human disturbance at an important coastal migration staging area has adverse impacts on shorebird movement patterns from preferred resting areas and utilization of food resources. Results indicate that adverse impacts from human disturbance were greater on species using the front side of beach habitats. The abundance of impacted species may be reduced by 50 percent. Such disturbance is implicated as a potential factor in long-term declines in shorebird abundance during migrational periods.

Along the Atlantic coast piping plover parents and young lose considerable foraging time because of human presence. They devote nearly 50 percent of their time watching for or avoiding people. Declines in foraging times during the course of the breeding season are adverse impacts cumulatively affecting individual health and overall reproductive success of plovers (Burger 1995).

A direct benefit for shorebirds is derived from seasonal closures to human access. Minimizing human disturbance will increase nesting and foraging opportunities on overwash habitats which will in turn increase shorebird nesting productivity. Seasonal closures of designated beach and overwash areas are in place to minimize disturbance to nesting shorebirds such as least terns, American oystercatchers, and potentially piping plovers.

Impacts to natural resources from this activity at present levels are expected to be minimal, primarily because the timing of the work avoids potential impacts described above.

**Public Review and Comment:**

Public notification and review included a news release sent to local media outlets and a flyer posted at the refuge headquarters (visitor center) for 14 days.

**Determination (check one below):**

☐ Use is Not Compatible  
☒ Use is Compatible with Following Stipulations

**Stipulations Necessary to Ensure Compatibility:**

1. The permittee is responsible for ensuring that all employees, party members, contractors, and any other persons working for the permittee and conducting activities allowed by this permit are familiar with and adhere to the conditions of the permit.
2. All work will be conducted on the interior (west) side of the dune line. No work will be conducted below mean high water on the bayfront (east) side of the dune line.
3. No toxic materials will be used or stored on the site except as required for maintenance and operation of the permit facility and approved in advance by the Refuge Manager.
4. Permittee shall exercise reasonable care as determined by the Refuge Manager in using toxic materials if such materials are required for the proper and safe operation of the permitted site.
5. The access to the unit must be closed and locked during entry/exit from the refuge.
6. The Refuge Manager may require permit modifications at any future time to ensure that the use and occupancy of the land is compatible with the purposes for which the refuge was established and the mission of the NWRS.
7. Refuge staff will periodically monitor the site, and findings from these monitoring efforts will be used to determine what additional management actions, if any, are needed to ensure permitted activities remain compatible with the purposes for which the refuge was established and the mission of the NWRS.
8. The permit may be terminated at any time by mutual agreement.
9. No work will be authorized between March 1 and August 15.

**Justification:**

After fully considering the impacts of this activity, as described previously in the “Anticipated Impacts” sections of this CD, this permit will not materially interfere with or detract from the mission of the NWRS or the purpose for which the refuge was established.

We will evaluate this CD if conditions under which the use is permitted change significantly, if there is significant new information regarding the effects of this use or upon renewal of the permit.

**Signature:**    Refuge Manager \_\_\_\_\_  
(Signature and Date)

**Concurrence:** Regional Chief \_\_\_\_\_  
(Signature and Date)

**Mandatory 10-year Re-Evaluation Date:** \_\_\_\_\_

## **Literature Cited**

### **Refer to the EA for additional literature cited incorporated by reference.**

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